

Subsaharan Ceratopogonidae (Diptera) VIII. Seven new species from the northern Transvaal

by

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Seven new species of biting midges from the northern Transvaal are described and illustrated: *Forcipomyia (Forcipomyia) creesi*, *F. (F.) letabanus*, *F. (Lepidohelea) ikinae*, *F. (L.) roseae*, *F. (Schizoforcipomyia) lecordeurorum*, *Alluaudomyia magobai*, and *Kolenhelea uysorum*. *Monohelea calcarata* Goetghebuer is transferred to the genus *Kolenhelea* (comb. nov.). A key is given to separate the five Subsaharan species of *Forcipomyia (Schizoforcipomyia)*; corrections are made in the species assigned to the subgenus *F. (Lepidohelea)*. The biting midges described here were collected by the second author and others in the north-eastern Transvaal at blacklight in 1977-1980. The types are in the collection of the South African Institute for Medical Research, Johannesburg.

Genus *Forcipomyia* Meigen

Subgenus *Forcipomyia* Meigen

***Forcipomyia (Forcipomyia) creesi* spec. nov., Figs 1, 2**

A small dark species with ornamented wings and dark legs with golden knees.

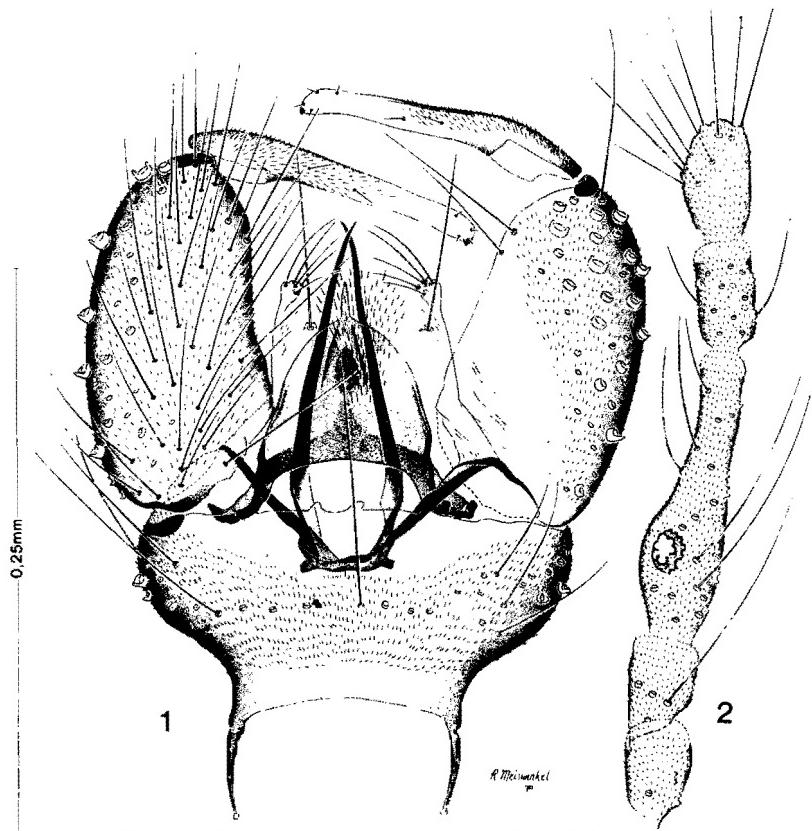
MALE HOLOTYPE. Wing length 1.41 mm.

Head. Dark brown; eyes touching in front, bare. Antenna with plume dark brown; segment III with long stalk, IV-VII subglobular, VIII-XI becoming elongated, XI-XV elongated, XV with terminal papilla; relative lengths of segments XI-XV, 22-86-37-30-40; antennal ratio 0.90. Palpus (Fig. 2) dark, five-segmented,

longer than proboscis; third segment swollen on basal half, with a marked sensory pit near base; relative lengths of II-V, 19-50-19-20.

Thorax. Mesonotum dark brown, heavily clothed with short golden decumbent scales and longer darker ones; scutellum brown, with 13 long bristles and numerous shorter ones; postnotum and pleuron brown. Wing yellow, with costal and radial areas dark-scaled and also a broad patch just beyond end of costa; dark areas bearing narrow scales with one, two, or three striations; pale areas bearing bristles that are partially flattened. Veins not prominent, slightly darker on costal and radial areas. Legs with narrow scales; entirely brown with very obvious golden spots at joints between femora and tibiae, between tibiae and tarsi, and also at apices of all tarsomeres; fore tibia with subapical row of close-set, narrow, transparent spines, apical spur long, brush-like, pale; hind tibia with apical row of eight long transparent spines and a subapical row of 15 shorter, close-set, narrower ones, apical spur long, brush-like and pale. Tarsal ratios 1.18 on fore leg, 0.53 on middle leg, and 0.60 on hind leg. Claws small, slightly curved; empodium well developed.

Abdomen. Dark brown, bearing long bristles. Genitalia (Fig. 1) dark brown.



Figs 1-2. *Forcipomyia (Forcipomyia) creesi*. 1. ♂ genitalia. 2. ♂ palpus.

Ninth sternum with caudal margin straight; ninth tergum normal, with membranous area between apicolateral lobes strongly spiculate. Basistyle about twice as long as broad; dististyle slender, of almost even width throughout, infuscated, bearing two short setae in midportion, apex bluntly rounded. Aedeagus shield-shaped, with apex pointed. Parameres joined at bases by basal apodeme, each extending caudad as a long narrow sclerotized strip of almost even width throughout, slightly tapering distally to slender point.

FEMALE. Unknown.

MATERIAL EXAMINED. ♀ Holotype, Debegeni, N. Transvaal, 19.xi.1977, R. Meiswinkel. Paratype ♂, Middelkop Tea Estates, N. Transvaal, 21.viii.1979; 1 ♂, Natal, Ngome, 22.xii.1979.

DISCUSSION. This species is named for Michael J. Crees of the Blair Research Laboratories, Harare, Zimbabwe, in appreciation of the time and patience devoted to collecting and rearing material for one of us (R. M.). *Forcipomyia creesi* resembles species of the subgenus *Lepidohelea* in possessing ornamented wings and narrow one- or two-striated barbed scales on the legs and barbed setae on the abdomen and antennae. The male genitalia, however, are typical of the subgenus *Forcipomyia* s. str., none of the described Subsaharan species of which possess similarly ornamented wings.

***Forcipomyia (Forcipomyia) letabanus* spec. nov., Figs 3, 4**

A small brown species with prominently banded legs and wing with one small whitish anterior spot.

MALE HOLOTYPE. Wing length 1,25 mm.

Head. Dark brown; eyes contiguous on front, bare. Antenna of even brown colour throughout; segment III with long stalk, IV–VI somewhat compressed, VII–XI gradually lengthening, XII–XV elongated, XV with terminal papilla; relative lengths of XI–XV, 23–98–45–30–45; antennal ratio 0,95. Palpus (Fig. 4) five-segmented, longer than proboscis; third segment swollen basally, with well-marked sensory pit near base; relative lengths of segments II–V, 25–60–25–19; palpal ratio 3,5.

Thorax. Mesonotum brown, broadly paler brown mesally, shoulders pale; scutellum brown, with 11 long bristles and many shorter ones of different lengths; postnotum and pleuron brown. Wing brown, a tiny whitish spot just past end of costa; veins not obvious; wing field bearing partially flattened hairs; costa and radial areas bearing narrow long scales with one striation, each slightly barbed in side view. Halter whitish. Legs pale, without scales; femora with broad apical and tibiae with broad basal brown bands, those on hind leg extending about one-third length of segment; fore tibia with subapical comb of close-set, narrow, transparent spines, apical spur of moderate length, pointed, not brush-like; hind tibia with apical row of nine long, strong, transparent spines and subapical row of 12 shorter, close-set ones, apical spur shorter than on fore leg though similar in character. Tarsal ratios 0,58 on fore leg, 0,44 on middle leg, and 0,54 on hind leg. Claws small, curved; empodium well developed.

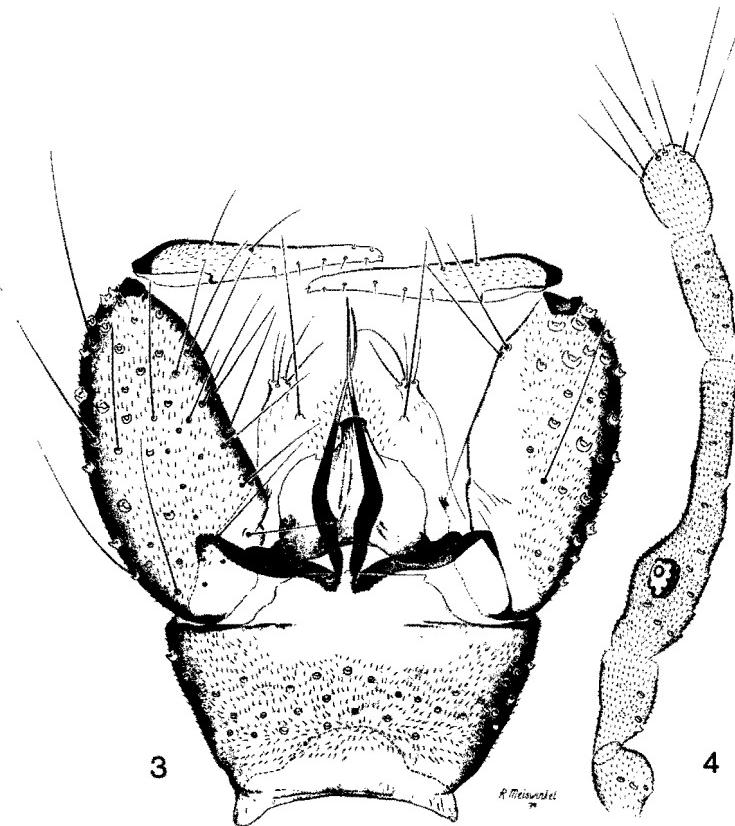
Abdomen. Brown. Genitalia (Fig. 3) with ninth sternum expanded mesad into a broad hump; ninth tergum normal, membrane between apicolateral lobes spiculate. Basistyle slightly more than twice as long as broad, with 3–4 short spines borne mesally near base (a condition also seen in *ashanti*); dististyle slender, narrowing to

beak-like apex, infuscated. Aedeagus shield-shaped, apex with short rounded distal process. Parameres separate, each with rather broad basal apodeme, caudal process moderately stout and bowed outward at base, tapering distad to a slender filament.

FEMALE. Unknown.

MATERIAL EXAMINED. ♂ Holotype, Greystones, N. Transvaal, 3.x.1978, R. Meiswinkel. Paratype ♂, Lushof (near Tzaneen), N. Transvaal, 3.xii.1978, H. A. van Bruggen; 1 ♂, Manorvlei (Tzaneen), N. Transvaal, 16.ix.1979, R. Meiswinkel.

DISCUSSION. This species is named after the Letaba District of the Transvaal Lowveld, where all the species described in this paper were collected. *Forcipomyia letabanus* keys to couplet 23 in Dessart's (1963) key to the Subsaharan *Forcipomyia*, but differs in the pattern of leg banding from the 25 species following that couplet. The male genitalia and wing markings resemble those of *F. biannulata* Ingram & Macfie, but that species has prominent brown bands on only the hind femur and tibia.



Figs 3-4. *Forcipomyia (Forcipomyia) letabanus*. 3. ♂ genitalia. 4. ♂ palpus.

Subgenus *Lepidohelea* Kieffer

In a recently published key to the subgenera of *Forcipomyia*, Wirth & Ratana-worabhan (1978) diagnose the subgenus *Lepidohelea* as having the wings marked, legs banded, dististyles expanded apically and body with conspicuous, numerous, flattened scales in addition to normal setae and hairs. The subgenus *Forcipomyia* is diagnosed as having the dististyles not expanded apically, the body and wings often marked with colour pattern of scales and hairs, and male genitalia with aedeagus shield-shaped with low basal arch. Employing these characters we find that the species *randensis* de Meillon, *randensisoides* Dessart, and *basendjiorum* Dessart, placed in the subgenus *Forcipomyia* in the Catalogue of Afrotropical Diptera (Wirth *et al.* 1980), should rather be in *Lepidohelea*. In *Lepidohelea* the key character 'dististyle elongate, sinuate with distinct distal expansion,' would function more broadly and accurately if it were redefined as being 'dististyle hyaline, with no long setae and of even width throughout or markedly expanded apically.' This would make provision for the species *randensisoides*, *cacaoi*, *ikinae*, and *hastata*, which have dististyles of even width throughout but undoubtedly belong within *Lepidohelea* on the basis of aedeagal structure. Another useful character for *Lepidohelea* is that the very long antennal setae and the long apicoventral setae borne on the basistyle are markedly barbed on their distal half. Also, the setae borne apicodorsally on the inner margin of the basistyle are noticeably expanded and transparent (see Fig. 7). Finally, this realignment of *randensis* would add the first descriptions of the immature stages of the subgenus *Lepidohelea* from de Meillon's 1931 paper.

In the Afrotropical Catalogue the species *Forcipomyia clastrieri* Dessart is placed in *Lepidohelea*, but de Meillon & Wirth (1980) placed it in their new subgenus *Pedipohelea*. With these subgeneric transfers and the descriptions of the following two new species the number of Subsaharan species of *Lepidohelea* is brought to 12: *basendjiorum* Dessart 1962: 140, *cacaoi* Dessart 1963: 186, *chrysolopha* (Kieffer) 1911: 333, *hastata* de Meillon & Wirth in press, *ikinae* spec. nov., *pampokila* Ingram & Macfie 1924: 570, *randensis* de Meillon 1931: 335, *randensisoides* Dessart 1961: 364, *roseae* spec. nov., *squamipennis* Ingram & Macfie 1924: 562, *statirae* de Meillon 1936: 165, and *venusta* Ingram & Macfie 1924: 569.

Forcipomyia (Lepidohelea) ikinae spec. nov., Figs 5, 6

A small brown species with banded legs and ornamented wings.

MALE HOLOTYPE. Wing length 1,08 mm.

Head. Dark brown; eyes narrowly separated, bare. Antenna light brown except for second segment, which is dark, and the distal three segments, which also are darker than III–XII; III with long stalk, IV–VIII subglobular, IX–XI gradually becoming elongated, XII–XV elongated, XV with terminal papilla; relative lengths of XI–XV, 20–63–32–25–32; antennal ratio 1,13. Palpus (Fig. 6) five-segmented, longer than proboscis; third segment swollen near mid-portion, with well-marked sensory pit at mid-length; relative lengths of segments II–V, 15–32–14–14.

Thorax. Mesonotum dark with broad rectangular paler area mesad ending at margin of prescutellar area, anteriorly this paler area with very narrow, short, dark, longitudinal stripe; scutellum brown, with 12 long bristles and a few shorter ones; postnotum and pleuron brown. Wing yellow, with dark areas as follows: entire length of costa and most of subcosta and radial area, a broad patch on wing margin situated

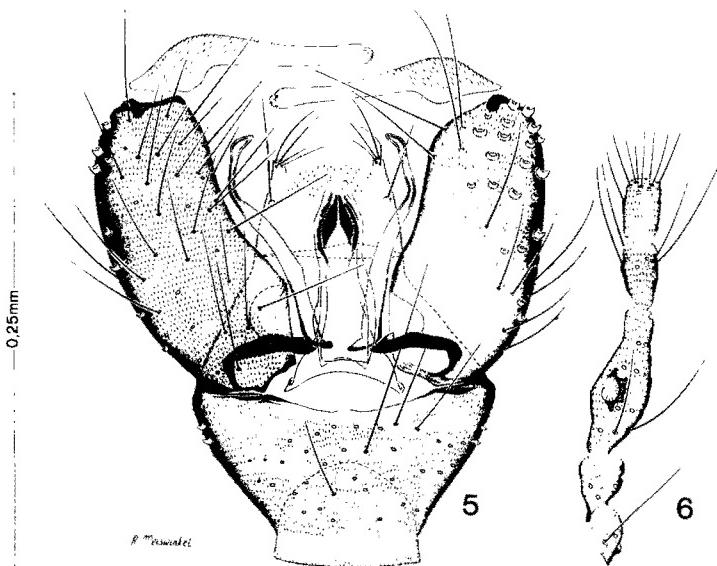
midway between end of costa and apex of wing, with margin between this patch and end of costa light brown; apices of veins M_1 , M_2 and $M_3 + 4$ dark-scaled, also entire length of vein Cu_1 including mediocubital fork. Wing clothed entirely with scales, the narrower paler ones with no striations, broader darker ones with a range of 1–5 striae. Legs banded, with scales. Fore femur brown, with median pale band, knee joint pale; tibia brown with median pale band, joint with basitarsus pale; tarsomeres I–IV brown, the joints pale, V entirely pale; tibia with subapical row of narrow, close-set, transparent spines, apical spur of moderate length, pale. Middle femur brown, with strong median pale band, knee joint pale; tibia with basal brown band one-sixth length of segment, median pale band one-third length, and apical half dark, joint with basitarsus pale; tarsomeres as on fore leg. Hind femur brown with very narrow almost imperceptible median pale band, knee joint strongly pale; tibia with basal brown band occupying one-seventh length of segment, submedian pale band one-third, subapical brown band one-fourth, and apical one-fourth pale; tibia with apical row of eight strong, close-set, transparent spines and a similarly coloured subapical row of ten shorter, narrower, close-set spines, apical spur well developed, brush-like, brown; joint with basitarsus pale; tarsomeres as on fore leg. Claws short, gently curved; empodium well developed. Tarsal ratios 1,20 on fore leg, 0,78 on middle leg, and 0,73 on hind leg.

Abdomen. Segments pale dorsally, with lateral and posterior margins brown, ventrally segments I–III largely pale; IV–VII increasing in darkness. Genitalia as in Fig. 5. Ninth sternum bearing a mixture of hairs and scales, posterior margin slightly excavated; ninth tergum normal, with membranous area between apicolateral lobes spiculate. Basistyle slightly more than twice as long as broad, basally with scales, unusual in having a broad pale transverse band medially; dististyle hyaline and of even width throughout, bent near base, which bears short transparent hairs; not markedly expanded apically. Aedeagus narrow, twice as long as broad and of the usual structure for *Lepidohelea*. Parameres distinctive, separated basally; each of a long strip of chitin, narrowing and bending subapically, swollen apically. Three features not illustrated are: broad scales on basistyle and ninth sternum; longer setae borne apically on inner margin of basistyle noticeably expanded and hyaline as illustrated for *roseae* (Fig. 7); large setae mostly borne apicoventrally on basistyles strongly barbed on distal half. Note: all genitalia are illustrated with left basistyle in dorsal view and right in ventral view.

FEMALE. Unknown.

MATERIAL EXAMINED. ♂ Holotype, Pusela, Tzaneen, N. Transvaal, 19.ix.1978, R. Meiswinkel.

DISCUSSION. It gives us much pleasure to name this species for Mrs Colleen Ikin of the National Institute for Tropical Diseases, Tzaneen, in appreciation for much help in various ways over the years. The species of *Lepidohelea* are most readily distinguished by features of the male genitalia; first by the shape of the dististyle, whether slender distally or expanded, and if expanded by the exact contours of the expansion; the parameres have easily definable differences in shape; and last the aedeagus, which is almost indescribably complex in shape, has specific differences in length and breadth, contours, and nature of the distal processes. In these features *F. ikiniae* comes closest to *F. pampoikila* and *F. statirae*, but differs from both in the shape of the dististyle.



Figs 5–6. *Forcipomyia (Lepidohelea) ikinae*. 5. ♂ genitalia. 6. ♂ palpus.

***Forcipomyia (Lepidohelea) roseae* spec. nov., Fig. 7**

A small brown species with banded legs and ornamented wings.

MALE HOLOTYPE. Wing length 1.05 mm.

Head. Dark brown; eyes closely approximated, bare. Antenna light brown except for second segment, which is dark, and distal three segments, which are also darker than III–XII; III with long stalk, IV–VIII subglobular, IX–XI gradually becoming elongated, XII–XV elongated, XV with terminal papilla; relative lengths of segments XI–XV, 23–58–35–27–37; antennal ratio 1.20. Palpus five-segmented, longer than proboscis; third segment slightly swollen on basal half, with well-marked sensory pit midway of swollen portion; relative lengths of II–V, 19–36–15–13.

Thorax. Mesonotum, scutellum, postnotum and pleuron dark brown. Wing yellow, with dark areas as follows: costa on radial area, also a broad patch on wing margin midway between end of costa and wing tip; apices of veins M_1 and M_2 narrowly darkened with vein M_{3+4} darkened broadly along half its length; entire length of Cu_1 and mediocubital fork darkened. Wing clothed entirely with scales, some with no striations, others with one to four striae. Legs banded, bearing a mixture of bristles and broad scales. Fore femur and tibia brown, with median pale band, knee pale, tarsomeres I–IV brown, with joints pale, V pale; tibia with subapical row of narrow, close-set, transparent spines; apical spur of moderate length, brush-like, pale. Middle femur with basal two-fifths brown, remainder pale, perhaps a shade darkened apically, knee pale; tibia brown, with median pale band and somewhat paler apex; tarsus as on foreleg. Hind femur brown, with median pale band, knee golden; tibia with subbasal

brown band, then a median pale band, followed by equal-sized subapical brown and apical pale bands, tibia with apical row of six separated, long, transparent spines and a subapical row of 12 shorter, narrower, close-set, transparent spines; apical spur long, hyaline, brush-like; tarsus as in fore and middle legs. Claws small, equal, gently curved; empodium well developed. Tarsal ratios 1,15 on fore leg, 0,76 on middle leg, and 0,66 on hindleg.

Abdomen. Segments pale dorsally, with lateral and posterior margins brown; ventrally segments I-III largely pale and IV-VIII increasing in darkness. Genitalia as in Fig. 7. Ninth sternum with posterior margin nearly straight, sternum bearing mixture of bristles and broad, five-striated scales; ninth tergum normal, with membranous area between apicolateral lobes spiculate (not illustrated). Basistyle about twice as long as broad, bearing broad scales basally; dististyle hyaline, with apical half gradually swollen and ending in broad rounded tip, basally with short transparent hairs (right dististyle of holotype with one long seta a third way from base). Aedeagus of usual type seen in *Lepidohelea*, 1,5 times as long as broad, broadly rounded apically. Parameres separate at base, filiform, of almost even width throughout, gently curving outwards, then distally recurving mesally and ending in sharp-pointed apex.

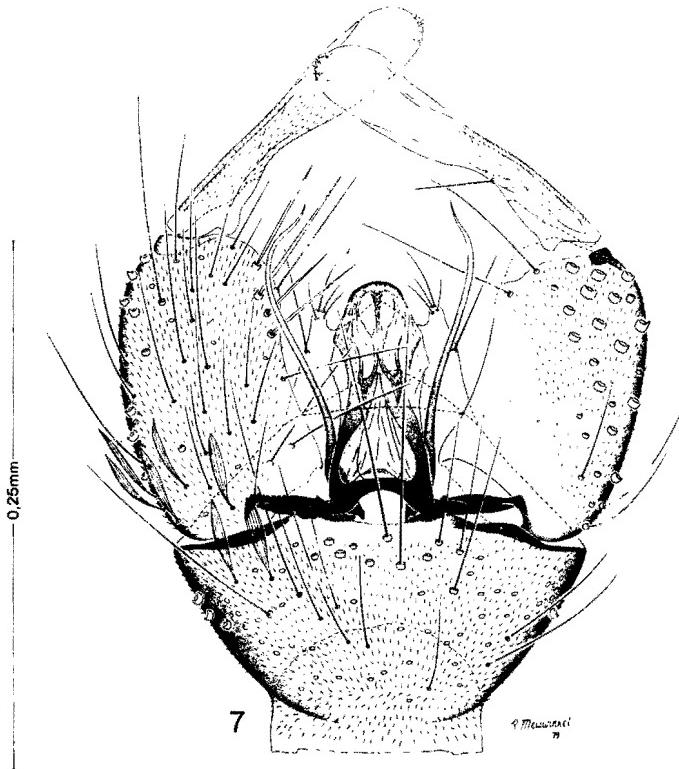


Fig. 7. *Forcipomyia (Lepidohelea) roseae*. 7. ♂ genitalia.

FEMALE. Unknown.

MATERIAL EXAMINED. ♂ Holotype, Lillee, Gravelotte, N. Transvaal, 28.ii.1977, R. Meiswinkel.

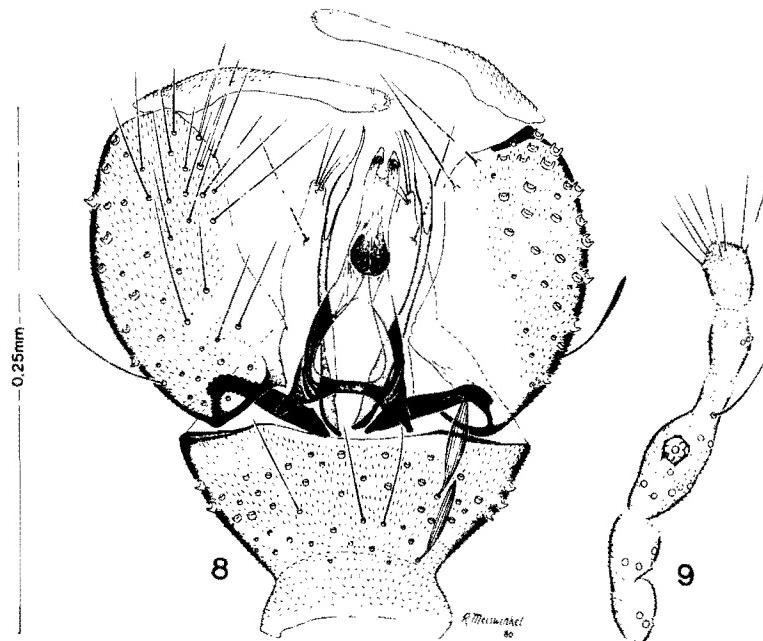
DISCUSSION. This species is named for Miss Theresa Rose of Harare, Zimbabwe, for her much-treasured hospitality and help for one of us (R.M.). *Forcipomyia roseae* differs from the other described Subsaharan *Lepidohelea* in the straight gradually expanded apically rounded male dististyle.

Forcipomyia (Lepidohelea) hastata de Meillon & Wirth, Figs 8, 9

Forcipomyia (Lepidohelea) hastata de Meillon & Wirth, in press (male, Transvaal; fig. palpus, genitalia).

MATERIAL EXAMINED. ♂ Holotype, Silver Leaves, New Agatha, Tzaneen, N. Transvaal, 3-5.x.1979. 1♂, Transvaal: Tzaneen, Middelkop, 12.ix.1979, R. Meiswinkel.

DISCUSSION. A corrected and more detailed drawing of the male genitalia (Fig. 8) and of the male palpus (Fig. 9) is reproduced from a specimen collected at Middelkop. In the original description the illustration of the male dististyle was shown foreshortened, giving an incorrect impression of its length and contours. The hastate tip of the paramere is distinctive.



Figs 8-9. *Forcipomyia (Lepidohelea) hastata*. 8. ♂ genitalia. 9. ♂ palpus.

Subgenus *Schizoforcipomyia* Chan & LeRoux*Forcipomyia (Schizoforcipomyia) lecordeurorum* spec. nov., Fig. 10

A small dark species with banded tibiae and ornamented wings.

MALE HOLOTYPE. Wing length 1,06 mm.

Head. Dark brown. Eyes narrowly separated in front, bare. Antenna light brown, three distal segments a shade darker and II the darkest, plume entirely brown; III stalked, IV–VI slightly compressed, VII–IX subglobular, X–XII becoming elongated and XIII–XV elongate, XV with terminal papilla; relative lengths of XI–XV, 18–90–33–23–33, antennal ratio 1,20. Palpus brown, longer than proboscis; five-segmented; III with basal half swollen, bearing well-marked circular sensory pit at mid-length; II–V lengths in proportion of 16–30–13–11.

Thorax. Mesonotum dark brown, clothed with longer dark and shorter golden bristles; scutellum brown, with 11 strong bristles and a number of shorter ones; postnotum and pleuron brown. Halter white. Wing yellow, with dark areas very much resembling the condition in the subgenus *Lepidochelea*; veins not obvious. Pale areas of wing entirely made up of narrow scales with no striations; dark areas composed of longer, darker, broader scales with one or two striations as follows: entire length of costa; parts of radius and radial area; a large broad patch lying on wing margin halfway between this area and termination of costa; apex of vein M_1 and wing field above it slightly darkened; vein M_2 darkened by only a few scales; entire length of veins M_{3+4} and Cu_1 darkened, as also mediocubital fork. Legs ornamented with a mixture of bristles and narrow scales with one striation. Fore, middle, and hind legs deep brown, with joints of all segments golden; fifth tarsomeres of all legs pale. Fore, middle, and hind tibia with narrow subbasal pale band, nearly imperceptible on middle tibia; fore tibia with subapical comb of close-set, narrow, transparent spines, apical spur short, pale, practically brush-like; apex of hind tibia broadly pale, bearing an apical row of eight shorter than usual, not too closely set, hyaline spines and a subapical row of 14 shorter, hyaline, close-set spines, apical spur as long as on foreleg, brush-like, hyaline. Claws small, curved; empodium well developed. Tarsal ratios 1,25 on fore leg, 0,88 on middle leg, and 0,80 on hind leg.

Abdomen. Dorsally all segments brown, bearing numerous long dark barbed bristles; ventrally segment I pale, II and III darkened laterally and mesally, IV–VIII entirely dark. Genitalia (Fig. 10) dark brown. Ninth sternum with posterior margin straight and bearing small but deep median excavation; ninth tergum short but normal, with membrane between apicolateral lobes spiculate. Basistyle with long, distally barbed setae, twice as long as broad; a remarkable feature is a very strong, hyaline, mesally directed, sharply pointed spine arising from mesal margin at base; dististyle dark at base, pale distally, slightly broader basally, slightly bent at proximal third and tapered to slender simple tip. Aedeagus of type usually seen in subgenus *Schizoforcipomyia*; heavily sclerotized basally in shape of a box-like platform, from which arises medianly a pair of deeply pigmented, outwardly directed, sharply pointed sclerites resembling goat horns. Parameres with basal apodemes deeply pigmented and relatively broad; main portion U-shaped, stout, strongly sclerotized, the caudal processes forming slightly curved, moderately stout blades with bluntly pointed apices meeting or slightly crossing behind tip of aedeagus.

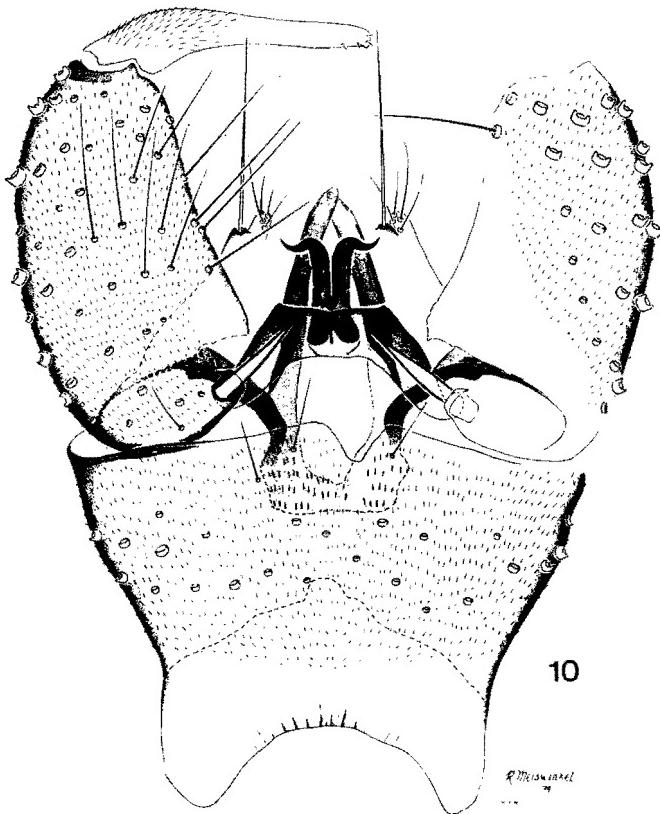


Fig. 10. *Forcipomyia (Schizoforcipomyia) lecordeurorum*. 10. ♂ genitalia.

FEMALE. Unknown.

MATERIAL EXAMINED. ♂ Holotype, Middelkop, N. Transvaal, 5.vii.1979, R. Meiswinkel. Paratype ♂, same data but collected 12.ix.1979.

DISCUSSION. This species is named for Jack and Biddy le Cordeur in appreciation of their help (R.M.). Four species of the subgenus *Schizoforcipomyia* have previously been described from subsaharan Africa. Their separation from the present species is most readily made on the basis of male genitalia, as in the following key.

Key to the species of subgenus *Schizoforcipomyia*

- 1 Aedeagus with basal arch V-shaped, longitudinal distance to the apex of the V nearly as great as the distance across the anterior ends of the slender nearly straight basal arms, distal processes short and slender; basistyle with two moderately stout spine-like setae on mesal margin in line a short distance from anteromesal corner **borbonica** Clastrier

- Aedeagus with basal arms short and stout, basal arch low and broad, distal processes stout; basistyle with or without one stout seta on mesal margin at base 2
- 2. Basistyle with one stout spine-like seta arising from mesal margin at extreme base *lecordeurorum* spec. nov.
- Basistyle without large, stout, spine-like seta on mesal margin 3
- 3 Aedeagus with distal processes once recurved, apices directed cephalad 4
- Aedeagus with distal processes twice curved, apices directed caudad *rudebecki* de Meillon
- 4 Parameres each broad distally, apex broadly rounded *anna* de Meillon
- Parameres each gradually narrowing distally and ending in a sharp point *warreni* de Meillon & Wirth

Genus *Alluaudomyia* Kieffer

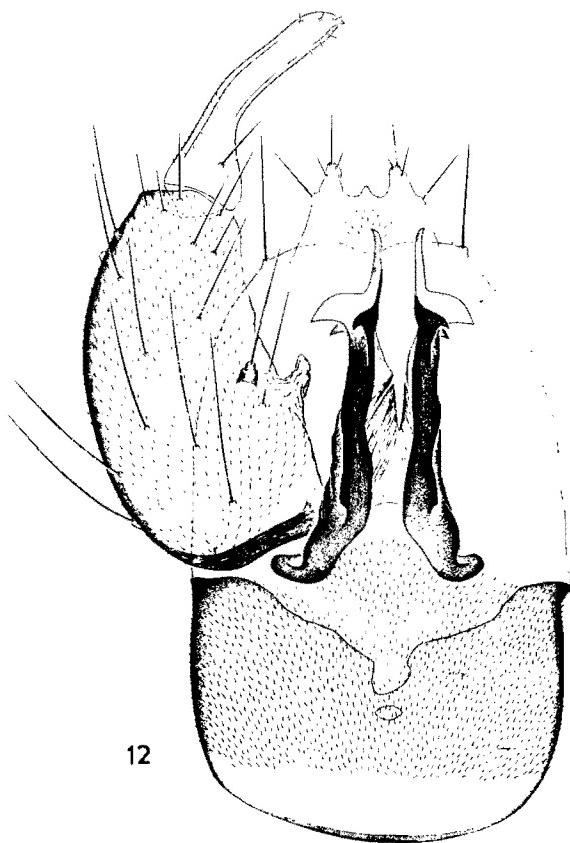
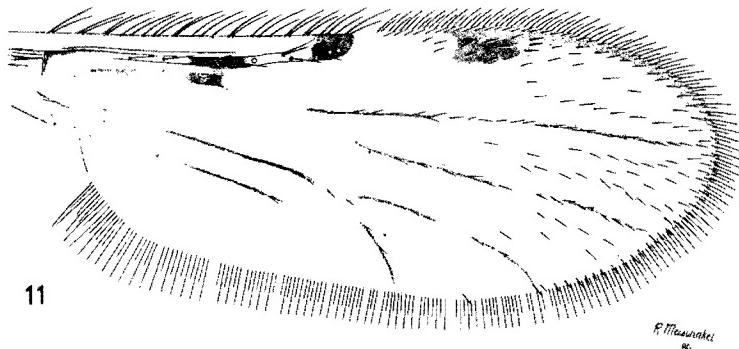
Alluaudomyia magoebai spec. nov., Figs 11–17

MALE HOLOTYPE. wing length 0,85 mm.

Head. Dark brown dorsally and caudally; eyes separated by width of two facets, bare. Antenna 15-segmented, with plume; segments I–II brown, III pale brown, IV–X subglobular, pale; XI cylindrical, pale; XII–XV light brown, elongated; relative lengths of segments XII–XV 12–29–25–37; XV with terminal seta; distal segments with clear round areas giving rise to very short, blunt-tipped, sensilla trichodea; antennal ratio 1,3. Palpus five-segmented, longer than proboscis; distal two segments darker than others (as in other species of *Alluaudomyia*); third segment short, parallel-sided, with small inconspicuous mesal sensory pit with two to three capitate sensilla; V narrower at base than at apex; relative lengths of II–V, 13–14–12–18.

Thorax. Mesonotum grayish brown, faintly spotted; scutellum pale brown, darker mesally and bearing four strong central setae (three in both paratypes) and one laterally, without small setae. Pleuron and postnotum brown. Wing (Fig. 11) with first radial cell obsolete, second small; wing membrane covered with microscopic microtrichia represented as dots with no length whatsoever; infuscated areas have these microtrichia denser and coarser, with some longer and darkly tinted; macrotrichia present along anterior border and apical halves of veins. Wing ornamented as follows: a dark spot covering second radial cell and r–m crossvein; cell R₅ with moderately dark, broad infuscation in midportion; all veins with short lengths infuscated with membrane area around these lengths pale grey-tinted; costal ratio 0,45. Legs unarmed, femora not swollen, light brown and banded; fore femur brown with narrow, distinct pale band, tibia brown with subbasal pale band, subapically with comb of close-set transparent bristles, apical spur well developed, hyaline and slightly brush-like; tarsomeres pale. Pattern of middle leg as in fore leg, tarsomeres pale. Hind femur slightly stouter than others, patterned as on fore and middle legs but with apex of tibia broadly pale, with six strong, semi-transparent bristles; spur short, stout, brush-like, hyaline; basitarsus brown, with comb of short, closely set, transparent spines running length of inner margin; tarsomeres II–V pale. Claws small, equal, gently curved.

Abdomen. Sclerotized, segment IX narrower than VII and VIII. Genitalia (Figs 12 and 16) with posterior margin of ninth sternum shallowly excavated but medially with an abrupt, deep, narrow excavation; ninth tergum rounded apically, with a shallow depression mesally, bearing a pair of transparent setose anal lobes. Basistyle broad at base, gradually narrowing towards apex, mesally at base bearing a triangular



Figs 11-12. *Alluaudomyia magoebai*. 11. ♀ wing. 12. Aedeagus, ninth sternite and tergite, dististyle and dorsal view of basistyle of ♂ genitalia.

projecting lobe and alongside it a pronounced papilla bearing a seta; base a strong, dark, sclerotized collar. Dististyle infuscated, strong, short, gently curved with one long seta basally and a number of small setae apically; tip rounded, beak-like. Aedeagus (Fig. 12) cleft down middle, unusual for genus in being cylindrical, heavily sclerotized, bearing six spur-like projections subapically; apex drawn out into two short thin points. Parameres (Fig. 16) separated at base, consisting of broad, blunt-tipped strips; basally with sclerotized, dorsolaterally projecting apodemes.

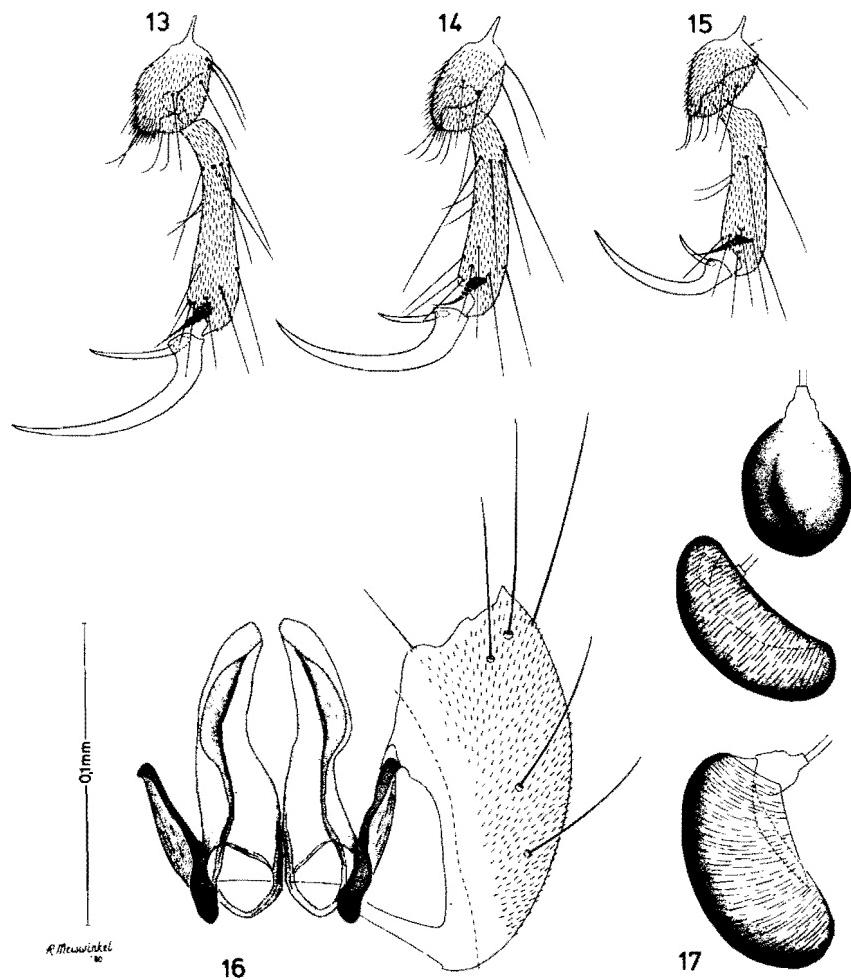
FEMALE PARATYPE. Wing length 0,95 mm, breadth 0,44 mm.

Head. Brown; eyes separated by width of half a facet, bare. Antenna with segments III–VIII pale at base, dark distally; II, IX–XV brown; I with four stout setae, II bearing two; III with short pedicel, IV–VI subglobular, VII–X flask-shaped, XI–XV not markedly elongated, XV with terminal seta. Relative lengths of flagellar segments 16–11–10–11–12–13–14–18–19–18–17–23; antennal ratio 1,08. As in male, distal segments have clear areas of cuticle with short, difficult-to-see, sensilla trichodea. Palpus similar to that of male; pit with three to four sinuous capitate sensilla; relative lengths of II–V 14–13–10–17. Mandible with ten strong sharply pointed mesal teeth.

Thorax. Grey-brown, indistinctly spotted; scutellum pale, brown mesad, with three strong median bristles and one on each side. Wing much as in male but with more numerous macrotrichia, these present on all veins and in cells on distal half of wing; infuscated areas smoky brownish; first radial cell obsolete, second small; media petiolate, M₂ obsolescent at base; costal ratio 0,45. Halter white. Legs unarmed, hind femur slightly stouter than others; all femora brown, with subapical pale band; tibiae on all legs brown, with basal pale band, also pale subapically but band less distinct; fore tibia with subapical row of 11 close-set, transparent spines, apical spur pale, stout, brush-like; hind tibia with apical row of six long, strong, semi-transparent spines and a subapical row of 12 short, close-set transparent ones; apical spur short, stout, pointed, brush-like. Hind basitarsus brown, armed with row of short, close-set spines running entire length of inner margin, basitarsus of fore and middle legs pale; tarsomeres II–V of all legs pale, with tarsomere V of moderate length, slender and slightly arcuate (Figs 13–15); claws on all legs unequal, smaller talon half or less than half length of longer one (Figs 13–15).

Abdomen. Segments I–VI pale; VIII strongly sclerotized, with wide and deep caudomedian excavation, this invagination holding the genital opening; IX narrower but similarly sclerotized and emarginated and carrying the anal opening; cerci a pair of separate, rounded, setose lobes; tenth segment bearing two median pairs of long seta, the posterior pair swollen on basal half. Spermathecae (Fig. 17) three, two of which are sausage-shaped and striated, measuring 0,075 by 0,036 mm and 0,064 by 0,028 mm, third round, without striations, measuring 0,044 by 0,036 mm, all with prominent necks 0,010 mm long.

MATERIAL EXAMINED. ♂ Holotype, Middelkop, N. Transvaal, 6.viii.1979, R. Meiswinkel. Paratype ♀, Pusela, Tzaneen, N. Transvaal, 26.viii.1979, C. K. Ikin, at blacklight; paratype ♂, same data as holotype; 1 ♂, Transvaal: Pusela, Tzaneen, 15.ix.1979, C. K. Ikin, at blacklight.



Figs 13-17. *Alluaudomyia magoebai*. 13. Tarsomeres IV and V and claws of female, fore leg. 14. Same, middle leg. 15. Same, hind leg. 16. Parameres and ventral view of basistyle of ♂ genitalia. 17. ♀ spermathecae.

DISCUSSION. This species draws its name from Chief Magoeba who, prior to the first entry of European pioneers into the lowveld, had his 'Stad' in the valley now known as Magoebaskloof. Four of the newly described ceratopogonidae were collected here.

A. magoebai possesses a number of characters unlike those considered typical for the genus *Alluaudomyia*. The costa is exceptionally short (costal ratio 0,45–0,50). Wing ornamentation consists of smoky diffuse areas surrounding infuscated lengths of veins as opposed to the small restricted dark spots usual in the genus. In *A. magoebai*, *A. transvaalensis* de Meillon, *A. louisi* de Meillon & Wirth and a fourth as yet undescribed species, there are two or three spermathecae; one or two may be sausage-shaped and striated and one may be rounded and not striated. In other species of *Alluaudomyia* there are one or two spermathecae, none of them striated. There is also a strong deviation in these species related to *magoebai* as compared with other *Alluaudomyia*, in the configuration of the sclerotized genital plates of the female, and there is no trace of a furca or other internal genital sclerotization.

The male genitalia of *magoebai* and its relatives also possess an unusual combination of characters. In *magoebai* the aedeagus is cylindrical and deeply sclerotized; in *louisi* and the fourth species it appears as two separate heavily sclerotized leaflets; the male of *transvaalensis* is undescribed. Usually in *Alluaudomyia* the aedeagus is undivided and shield-shaped, with a more or less prominent basal arch. The heavy parameres are similar in the three species and are all connected in the same manner to the basistyles (see Fig. 16). Also in these species the ninth tergum is rounded, without apicolateral processes. The basistyle has a large, broad, triangular anteromesal projection and at base a strong sclerotized collar (these latter two characters may be valuable in confirming the belief that the genus *Alluaudomyia* belongs in the tribe Stilobezziini (see de Meillon & Wirth 1979). However there are a number of similarities that partially neutralize the differences noted above and would lower their significance to perhaps at most the subgeneric level: antenna with no segments bearing sensilla coeloconica; palpus five-segmented, with IV and V darker than rest and with V expanded distally, III slender, with small sensory pit bearing capitate sensilla; mandible with coarse teeth, though low in number (ten as opposed to the 14–22 counted on the *Alluaudomyia* species at hand); wing with same type microtrichia and macrotrichia and same distribution of dark spots; first radial cell obsolete, second small; legs slender, with female claws unequal on all legs. The lack of an internal furca in the female abdomen allies these species with the *parva* group and distinguishes them from the more numerous *Alluaudomyia* species with multiple-spotted wings.

The male of *Alluaudomyia magoebai* is readily distinguished from that of *A. louisi* by the conformation of the aedeagus and parameres as described above. Females of *magoebai*, *louisi*, and *transvaalensis* are virtually identical except for the entirely pale hind tibia in *louisi*.

Genus *Kolenuhelea* de Meillon & Wirth

Kolenuhelea uysorum spec. nov., Figs 18–25

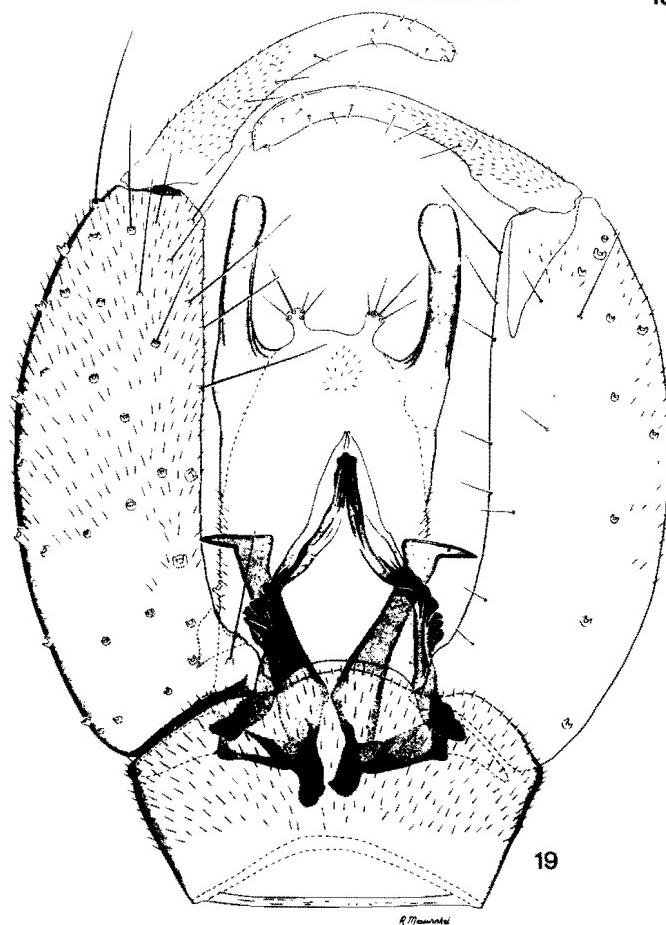
Stout, medium-sized brown midge with unmarked wings.

MALE HOLOTYPE. Wing length 1,01 mm.

Head. Dark brown; eyes separated by the width of more than one facet, bare. Antenna 15-segmented, brown, segment II darker; distal three segments elongated,



18



19

Figs 18–19. *Kolenhelea uysorum*. 18. ♂ wing. 19. ♂ genitalia.

relative lengths of XII–XV 20–40–35–37; antennal ratio 1.0. Palpus longer than proboscis, five-segmented; third segment parallel-sided or only slightly swollen in midportion, small but distinct sensory pit on mesal side just beyond middle; relative lengths of segments II–V 19–23–12–20.

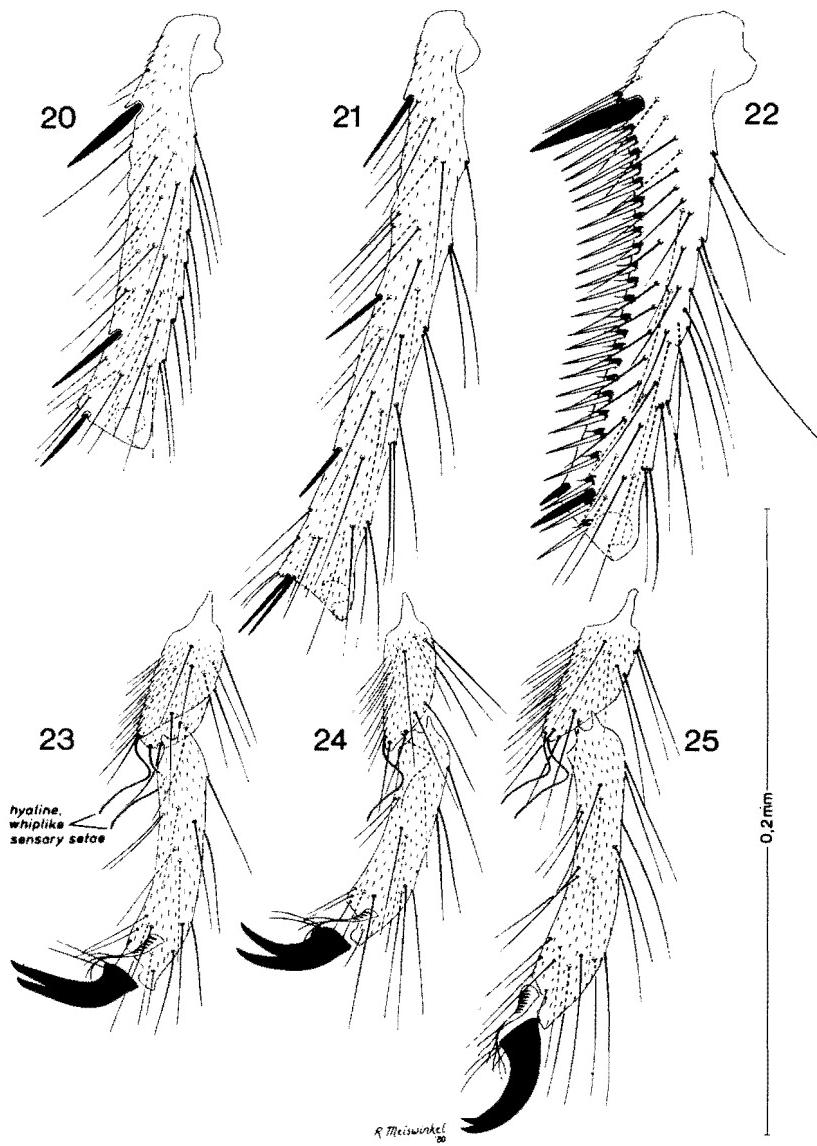
Thorax. Mesonotum, postnotum and pleuron brown; scutellum brown with six long strong bristles and six small hairs. Wing (Fig. 18) without ornamentation but with veins well marked; two radial cells, first slightly longer than second; costal ratio 0.58; microtrichia minute and dense, a few macrotrichia present distally as far proximad as end of second radial cell. Legs (Figs 20–25) brown, unbanded; femora unarmed, trochanters without spines; tarsomeres paler. Femur and tibia of foreleg brown, tibia with subapical comb of long, close-set transparent bristles; apical spur of moderate length, strong, thick, not brush-like; basitarsus (Fig. 20) with a strong black spine subbasally and a weaker one each subapically and apically. Middle femur and tibia brown; basitarsus (Fig. 21) with five dark spines situated one of each subbasally, submedianly, subapically, and two apically; these spines not as strong and dark as seen on fore leg. Hind femur slightly swollen, dark brown; tibia also dark with apical row of eight strong, narrowly separated bristles and a subapical row of about 26 shorter, close-set, transparent bristles; apical spur short, broad, markedly brush-like; basitarsus (Fig. 22) typical of genus, slightly arcuate, with a strong basal and apical spine and a third smaller apical one (sometimes not easily distinguished from the palisade setae), also a row of close-set, shorter, narrower, semi-transparent spines (palisade setae) running entire length of segment. Distal tarsomeres of all legs unarmed; tarsomere IV on all legs with characteristic whip-like, hyaline sensory hair (Figs 23–25); tarsomere V long and slender. Claws small, simple and equal on all legs (Figs 23–25).

Abdomen. Strongly sclerotized dorsally and ventrally; terga with a variable number of small clear spots from each of which arises a seta. Genitalia (Fig. 19) deep brown, enlarged and wider than segments VII–VIII. Ninth tergum with apicolateral processes parallel-sided, greatly elongated and rounded apically. Basistyle three times as long as wide, not swollen as usually seen in the genus; basally on inner margin bearing a triangular thorn-like process; base of basistyle with broad sclerotized collar. Dististyle pigmented, curved, of almost even width throughout; apex rounded, with a slight beak. Aedeagus slightly longer than wide and more or less bell-shaped, with lateral margins darkly pigmented and distinctly rugose; two small points meeting distally to form apex. Parameres separate, gradually diverging from bases; each of a fairly broad strip ending in a laterally projecting apex resembling a foot with pointed toe.

FEMALE. Unknown.

MATERIAL EXAMINED. ♂ Holotype, Middelkop, Letaba, N. Transvaal, 17.viii.1979, R. Meiswinkel. Paratype ♂, same data but collected 28.viii.1979.

DISCUSSION. This species is named for Malcolm and Allison Uys of Harare, Zimbabwe, in appreciation of their hospitality and help to one of us (R.M.). Rieb & Delacolle (1979), in a superbly illustrated paper, redescribed the male and female of the species that Goetgebuer (1920) described as *Monohelea calcarata* (male) and Edwards (1929) described as *Stilobezzia sharpi* (female). They showed that the two belonged to the same species, which they placed in the genus *Stilobezzia*, subgenus *Neostilobezzia*. Examination of a male and a female kindly furnished by Dr Rieb reveals that



Figs 20–25. *Kolenuhelea uysorum*. 20. Fore basitarsus. 21. Middle basitarsus. 22. Hind basitarsus. 23. Tarsomeres IV and V and claws of fore leg. 24. Same, middle leg. 25. Same, hind leg.

the species is a typical member of the genus *Kolenuhelea* and should be known as *Kolenuhelea calcarata* (Goetghebuer), **comb. nov.** This unexpected extension of the range of what was previously thought to be an exclusively South African genus to northern Europe is surprising.

Kolenuhelea ulyssorum resembles *K. calcarata* more closely than the four species from South Africa described by de Meillon & Wirth (in press), namely *dycei*, *milleri*, *mirabunda*, and *mirifica*, in the following respects: male ninth tergum with apicolateral processes elongate, without basal lobe; dististyle long, slender and curving, without distal fork; parameres relatively short and stout, tapering from base, with sharply pointed lateral processes from apex. *K. calcarata* has the apicolateral processes of the ninth tergum much shorter and stouter than in *ulyssorum*, and they are distinctly curved with concave side mesally and slightly dorsally. The dististyle of *ulyssorum* is even longer and more slender than in *calcarata*. The small second strong spine at the tip of the hind basitarsus is easily overlooked, but is present in the other South African species, although not mentioned in their original description.

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